PEACE/WILLISTON
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COMPENSATION
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Donna Creek Biodiversity Project: Progress Report, 1993/94 and 1994/95

M. D. Wood
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The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

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Author(s): Mari D. Wood[1]
Address(es): [1] Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave., 3rd Floor Prince George, B.C. V2L 3H9

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The Donna Cr. Forestry/Biodiversity Project is a cooperative venture of:

Peace/Williston Fish and Wildlife Compensation Program

Fletcher Challenge Canada Ltd.

Habitat Conservation Fund of British Columbia

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PROGRESS REPORT
DONNA CREEK FORESTRY/BIODIVERSITY PROJECT

Year 2: 1993/94 AND Year 3: 1994/95

1.0 BACKGROUND:

This project aims to develop and test alternate forest harvesting systems which maintain critical habitat elements designed to benefit cavity nesting birds and mammals. Three treatments, as described under "Results to Date" and a conventionally logged control have been included in each of three cutblocks resulting in an experimental design which will be evaluated for use over time by breeding birds, especially cavity nesters, and by pine marten. Monitoring of the success of the different trials will be achieved by conducting spring breeding bird surveys and winter furbearer track surveys, documenting successional stage in the blocks, and examining the habitat features retained during harvesting for decay and blowdown rates. In year 1 (of a minimum 10 year project), the blocks were logged, snag assessment monitoring began, and transects were laid for wildlife surveys (Wood, 1992). Cooperators on this project include the Habitat Conservation Fund (HCF), the Peace/Williston Wildlife Compensation Program (PWWCP), and Fletcher Challenge Canada Ltd (FCCL).

2.0 OBJECTIVES;

The objective of this project is to develop and test alternate forest harvesting techniques designed to maintain critical habitat elements that will benefit cavity nesting birds and mammals. This project has the potential to:

(1) Provide foresters and biologists with tested forest harvesting techniques to use in that can be used in managing for biological diversity.
(2) Provide a demonstration area to educate, discuss and promote the cooperative management of forests for biological diversity.

3.0 TECHNICAL DETAILS;

Three 100 hectare blocks were delineated for harvest in the Donna Creek drainage, a tributary to the Manson River about 85 km northwest of Mackenzie, BC. The blocks were between 1000 and 1300 metres in the Engelmann Spruce Subalpine Fir (ESSF) biogeoclimatic zone. Prior to harvest, the various treatment areas were delineated with flagging, in addition to the habitat features that were to be retained during logging. Two blocks were logged in October 1991, and the third in August 1992.

Each of the three blocks were divided into four sections (each roughly 25 hectares) with three treatments and a control assigned randomly in each block. Specific logging treatments included 1) retention of 8-10 short (3-4m) snags per hectare by felling with a mechanical feller-buncher ("Snags

Only"); 2) retention of a 0.25 hectare island of mixed age timber for every 8 hectares of area clearcut ("Islands Only"); and 3) a combination of treatments 1 and 2 ("Snags and Islands"). The fourth quarter of each block was a conventionally logged control ("Clearcut"). In addition, three 25 hectare areas of old growth (one in the vicinity of each 100 hectare block) were delineated for comparison during breeding bird & furbearer surveys ("Old Growth").

4.0 RESULTS TO DATE:

Details on the harvesting of the three study blocks, the three treatment regimes, block mapping, transect layout and first three-metre snag assessments are presented in the Donna Ck. Forestry/Biodiversity Project 1992/93 Progress Report (Wood, 1992).

1993/94

Breeding bird surveys using a fixed-width transect survey method, were conducted in the spring of 1993 by contract biologists. Transects were located and flagged in all four treatments in each of the three blocks, and in the old growth control areas in the previous year. Approximately 1.5 km of transects were located for each 25 hectares of treatment area. Transects were spaced 150 metres apart and covered the entire treatment area. The beginning and end of each transect were marked with metal tree tags and flagging. Every 100 metres along the transect was marked by a tall metal rod, while flagging tape marked every ten meter interval. The distance and treatment unit were marked on the flagging tape with permanent felt pen. To aid with distance estimations for breeding bird surveys, markers at distances of 25, 50 and 75 metres were flagged perpendicular to the 100 metre marks.

Breeding bird surveys were conducted between May 14 and July 13 in the early morning periods. Each transect in each block was surveyed approximately 12 times. Surveys involved walking the transects, and recording the location of visual or audio observations of the birds relative to the transects. Sixty-seven different bird species were recorded, eleven of which were cavity nesters (Summers, 1993). There was a significantly higher density of cavity nesting birds in the Snags-and-Islands Treatment than in the Clearcut Control, but no difference in densities was found between the Clearcut Control and the other two treatments (Snag Only and Islands Only). There was also a significantly higher density of cavity nesters in the Old Growth control than in any of the treatments or Clearcut control. The density of cavity nesters in the Snags-and-Islands Treatment was 25% of that observed in the Old Growth. Some range extensions for specific passerine species were also identified and documented (Price, 1993).

Furbearer track surveys were conducted in January and March 1994 in all the treatment and control areas. The same transects used for the breeding bird surveys were employed in the furbearer track surveys, and were travelled by snowshoe or snowmobile depending on snow conditions. All furbearer tracks crossing the transect line were identified and their position along the transect line recorded. Squirrel, weasel, snowshoe hare and marten were the most common furbearer tracks encountered (Corbould, 1994). All squirrel tracks, and all but four snowshoe hare tracks were observed in the Old Growth control areas. There was no significant difference in the abundance of marten tracks between the Clearcut control and any of the treatment areas, however, marten were

significantly more abundant in the Old Growth than in the Cleacut or Treatment areas. Trailing of marten tracks revealed use of the residual islands of timber, with relatively direct movements observed between the forest edge and the islands, and/or between islands.

1994/95

In the summer of 1994, vegetation, snag and island assessments were conducted. Vegetation plots were established in Block 5547 to document species, vertical structure and successional stage of vegetation in the block. Fourteen permanent macroplots were established, using the methodology outlined in "Procedures for Environmental Monitoring in Range and Wildlife Habitat Management" (Habitat Monitoring Committee, 1990). In the portion of the block that lay within the ESSFmv3 - 04 ecological association, 3 plots were established in the mid slope zone of the block, 3 in the toe slope zone, 3 in the valley bottom, and 3 in a riparian zone (Corbould, in prep). Two more plots were established in the valley bottom portion of the block that lay within the ESSFmv3 - 05 ecological association.

A second assessment of a sample of the previously marked three-metre snags in Block 5547 was also attempted. All of the sample snags in the Snags Only treatment were assessed, but problems encountered with the increment bores prevented all of the sample snags in the Snags-and-Islands treatment from being assessed this year. During the first assessment of the three-metre snags in 1992 (Murray, 1992a), data was collected including species, site position, dbh, height, decay stage, % bark remaining and top condition. Use by wildlife including cavity nests, open nests, feeding sign or perching sign was also recorded. Additional data collected during the second survey of snags in 1994 included an assessment of the soundness of roots (determined by exposing the roots close to the base of the tree), and of the heartwood and sapwood (determined using an increment bore).

In 1992, all standing trees in four of the retention islands in Block 5547 were marked with numbered tree tags. These islands were revisited in the summer of 1994, and the tag numbers of those trees still standing were again recorded. This enabled overall blowdown rates for the islands to be calculated, in addition to blowdown rates by tree species and by decay stage (Wood, in prep).

5.0 PUBLIC REACTION;

Public awareness of the project in the last two years has been achieved through press releases and articles in "Natureline", the Peace/Williston Compensation Program newsletter. Slide/talk presentations were given to a UNBC Conservation Biology class in November 1993, at the Ecosystem Seminar Series hosted by the Ministry of Forests, B.C. Environment and B.C. Parks in Pr. George in December 1993, and to the Prince George Naturalists Club in May 1994. Poster displays were presented at the Peace/Williston Compensation Program open houses held in Prince George, Mackenzie, Chetwynd and Fort St. John in the spring of 1993, and the Non-Game & Watchable Wildlife Symposium in Victoria in October 1993.

Public reaction has generally been positive and highly supportive of the project. Comments have been made on the size and density of the 0.25 hectare islands: whether they are too small to be of much benefit to wildlife. As this project required the support of a major logging company, we felt

pleased that Fletcher Challenge was willing to modify the blocks for us as they did, and expressed this at the workshops. Although blowdown of the islands is occurring, use of the islands by passerine birds, cavity nesting birds and pine marten has been documented.

6.0 PHOTOGRAPHIC RECORD:

Photos taken during harvesting of the blocks, aerial photos of the study blocks, and photos of individual three metre snags were included in the 92/93 Progress Report. Additional photos available through the Peace/Williston Compensation Program office in Prince George include: study blocks, winter furbearer track surveys, three metre snag with nesting holes, and three metre snag assessments.

7.0 BUDGET DETAILS:

1992/93	PWWCP	FCCL	HCF
Wildlife Biologist, Williston - (26 days @ $250/day)	6500		
Environmental Asst, Williston - (9 days @ $160/day)	1440		
Lease Vehicles - (8 days @ $50/day)	400		
Biologist, Contract - Snag Assessments, Transects, Block Mapping - (26 days @ $225/day)	600		12900
Assistant, Contract - Transects - (16 days @ $100/day)	1100		500
Contractors Vehicles - (21 days @ $20/day)	420		
Accommodation - (52 days @ $65/day)		3380	
Snowmobile Purchases, Flagging Tape & Film	10240		
TOTAL	20,700	3,380	13,400

1993/94	PWWCP	FCCL	HCF
Wildlife Biologist, Williston - (26 days @ $257/day)	6682		
Assistant Biologist, Williston - (33 days @ $232/day)	7656		
Environ. Asst, Williston - (10 days @ $197/day)	1970		
Wildlife Biolgists, Contract - Bird Surveys - ($24,864 TOTAL)	13464		11400
Technicians, Contract - Transects - (25 days @ $100/day)	2500		
Accommodation - (119 days @ $65/day)		7735	
Lease Vehicles - (50 days @ $60/day)	3000		
Flagging Tape, Hipchain, Pencil Rods, Film	1165		
TOTAL	36,437	7,735	11,400

1994/95	PWWCP	FCCL	HCF
** Wildlife Biologist, Williston - (20 days @ $265/day)	5300		
Assistant Biologist, Williston - (5 days @ $254/day)	1270		
Environ. Asst., Williston - (13 days @ $190/day)	2470		
Technicians, Contract - Snag Surveys - (11.5 days @ $100/day)	1150		
Accommodation - (24 days @ $65/day)		1560	
Lease Vehicles - (16 days @ $60/day)	960		
TOTAL	11,150	1,560	0

**Denotes projected expenditures

1995/96 **All are projected expenditures	PWWCP	FCCL	HCF
Wildlife Biologist, Williston - (20 days @ $282/day)	5640		
Assistant Biologist, Williston - (30 days @ $262/day)	7860		
Wildlife Biologists, Contract - Bird Surveys - ($29,900 TOTAL)	11000		18900
Technicians, Contract - Snags - (15 days @ $150/day)	2250		
Technicians, Contract - Furbearers - (15 days @ $150/day)	1250		1000
Accommodation - (142 days @ $65/day)		9230	
Lease Vehicles - (52 days @ $75/day)	3900		
Flagging Tape, Hipchain, Pencil Rods, Film			100
TOTAL	31,900	9,230	20,000

8.0 FUTURE ACTIVITIES;

In the remainder of this fiscal year, a final analysis of the breeding bird data and subsequent report will be prepared by a contract biologist. In addition, a report on the second year of snag decay and wildlife use assessments, and island blowdown rates will be prepared. Planning for the 95/96 fiscal year will begin over the winter with the hiring of a contracter to conduct the second set of spring breeding bird surveys next year (95/96). Table 2 outlines a schedule of future monitoring activities for the project. The frequency of conducting breeding bird surveys, furbearer track surveys, snag/island assessments and vegetation plot monitoring will be approximately 2, 5, and 9 years after the first survey of its kind is conducted.

Table 2. Monitoring schedule for the first 8 years post harvesting.

ACTIVITY/YEAR	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00
Block mapping	X			X				
Mark survey transects	X			X			X	
Breeding bird surveys		X		X			X	
Vegetation Plots			X		X			X
Mark sample snags	X						X	
Snag Assessments	X		X	X			X	
Furbearer surveys		X		X			X	

9.0 REPORTS PRODUCED OR IN PREP;

Corbould, F.B. 1994. Donna Creek Furbearer Survey, 1994. Status Report. Peace/Williston Wildlife Compensation Program, Prince George, B.C. 7 pp.

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Murray, L.J. 1992a. Cavity Nester Habitat Selection Project: Phase 1 Report: Snag Deterioration. Status Report. Prepared for the Peace/Williston Wildlife Compensation Program, Prince George, B.C. 11 pp.

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